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Records of Three New Freshwater Fishes from the Fiji Islands[1]

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ABSTRACT: Three freshwater fish species new to the Fiji Islands are recorded. These species are *Coelonotus argulus* Peters (Syngnathidae), *Doryichthys retzi* (Bleeker) (Syngnathidae), and *Butis butis* (Hamilton-Buchanan) (Eleotridae).

THE FIJI ISLANDS have been visited on a number of occasions by overseas collecting expeditions. In the main, these expeditions have concerned themselves with the botany of the islands or concentrated on the myriad marine forms to be found on the reef. Few of these visitors gave the brackish and fresh waters of Fiji more than a cursory examination. It is not surprising, therefore, that literature on species from these environments is often scattered. Whitley (1927) published a checklist of Fiji fish and included a number of fluviatile forms in it. Herre (1935) increased the list with species collected during the Crane Pacific Expedition, and Fowler (1959) collated most of the then known information on the various species in his book. However, until now there have been no checklists of the brackish and freshwater fish specifically. This lack of information prompted a survey in 1979 (Ryan 1980) during which the three new records reported here were found.

METHODS

Butis butis were collected from brackish and freshwater areas of Naikorokoro Creek, a small stream about 16 km Southwest of Suva, Viti Levu, by using the anaesthetic quinaldine in quiet pools. At no stage were *Butis butis* seen before treatment with the anaesthetic and the appearance of anaesthetized specimens was totally unexpected. Eight specimens were collected during one visit in May 1979 and preserved in 70 percent alcohol.

Both species of pipefish were collected from the Wainibau Creek, a small stream on the east coast of Taveuni, about 1 km south of Lavena village on 11 September 1979. While it was expected that pipefish would be found in this area, none were seen until stream vegetation was beaten with a net. Nine specimens of *Doryichthys retzi* and one of *Coelonotus argulus* were taken here and preserved in alcohol. Interestingly, the Lavena villagers were not familiar with these fish. Subsequently, normal morphometric measurements were made and the fish were identified, mainly through the use of keys given by Munro (1967).

NEW RECORDS

ORDER SYNGNATHIFORMES

FAMILY SYNGNATHIDAE

Coelonotus argulus Peters

COLLECTION SITE: Wainibau Creek, Lavena, Taveuni (16°52′15″ S, 179°53′40″ W).
NUMBER OF SPECIMENS: One.
STANDARD LENGTH: 114 mm.
HEAD AND TRUNK LENGTH: 43 mm.
FIN RAY COUNT: Dorsal 49; anal 3; pectoral 16; caudal 9.
BODY RINGS: Trunk 16; tail 38.

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REMARKS: The single specimen collected conformed closely to the species definition given by Duncker (Herre 1935). The only obvious difference between this specimen and the characters given by Duncker is the presence of three rays in the anal fin instead of four. However, in other species of Syngnathidae, there may be either three or four rays, so this difference is probably not significant.

Doryichthys retzi (Bleeker) *ragged tail pipefish*

COLLECTION SITE: Wainibau Creek, Lavena, Taveuni (16°52′15″ S, 179°53′40″ W).

NUMBER OF SPECIMENS: Nine.

STANDARD LENGTH: 53–88 mm.

FIN RAY COUNT: Dorsal 34–35; anal 3–4; pectoral 16–19; caudal 9.

BODY RINGS: Trunk 16; tail 30–31.

RINGS WITH DORSAL ATTACHMENT: Trunk 1–2; tail 7–8.

REMARKS: All specimens collected conformed closely to the description in Munro (1967), although all possessed close to the maximum number of tail rings (31) and close to the minimum number of dorsal rays (34).

ORDER PERCIFORMES

FAMILY ELEOTRIDAE

Butis butis (Hamilton-Buchanan) *crimson-tipped flathead gudgeon*

COLLECTION SITE: Naikorokoro Creek, Viti Levu (18°06′50″ S, 178°19′25″ E).

NUMBER OF SPECIMENS: Eight.

STANDARD LENGTH: 20.3–69.3 mm.

FIN RAY COUNT: Dorsal VI; I,8; anal I,8; pectoral 18.

LATERAL-LINE SCALE COUNT: 29–30.

HORIZONTAL SCALE ROWS: 10.

DEPTH (in SL): 5.7–7.4.

HEAD (in SL): 2.7–3.0.

EYE (in HL): 5.4–8.1.

INTERORBITAL (in HL): 1.25–2.1.

REMARKS: The population investigated at Naikorokoro followed the definition given by Munro (1967). There were minor differences; a number of fish had 29 instead of 30 scales in a lateral-line scale count, five fish exceeded the range given for the eye, four exceeded the range given for the interorbital. Color patterns were similar to those given, except two white spots are present at the base of the pectoral fin instead of a double black spot. These differences are minor and are likely to be characteristic of a localized population.

Behavioral patterns are rarely used in fish taxonomy, but it is worthy of note that *Butis butis* is able to control its position in the water column with a facility seen in few other fish. This species is likely to swim upside down or scull slowly around in a head up or down position. This feature immediately separates it from any other freshwater or brackish-water Fiji fish I have encountered.

DISCUSSION

The fluviatile species listed in works on Fiji are rarely endemic, most of them having an almost pan-Tropical distribution (but excluding the Americas). It is likely that a species listed from islands to both the west and east of Fiji will be found here. *Coelonotus argulus* falls into this category, being listed from the Indo-Australian Archipelago (Flores) by Weber and Beaufort (Herre 1935) and from the Marquesas by Herre (1935). *Doryichthys retzi* is found in the Solomon Islands (Gray 1974) and as far east as Western Samoa (Schultz 1943), but like *C. argulus* it has not been reported previously from Fiji except by Bruce Carlson, who reports one specimen in an unpublished checklist. *Butis butis* is known from Queensland (Grant 1978) and from the Solomon Islands (Gray 1974) but not from islands further east (Fowler 1928). The presence of

the two pipefish in Fiji does not come as a great surprise, but the discovery of *B. butis* is interesting and may represent a recent extension of its previous range. It would be worthwhile to investigate streams in Tonga and Western Samoa. Further investigations in the Fiji group are underway and more new records are likely.

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LITERATURE CITED

FOWLER, H. W. 1928. The fishes of Oceania: B. P. Bishop Mus. Mem. 10.

———. 1959. Fishes of Fiji. Government of Fiji, Suva. 670 pp.

GRANT, E. M. 1978. Guide to fishes. Department of Harbours and Marine, Brisbane, Queensland. 768 pp.

GRAY, W. N. 1974. The fishes of the Solomon Islands. Part I: The fresh and brackish water fishes on Guadalcanal. Solomon Islands Museum Association. 45 pp.

HERRE, A. W. 1935. New species obtained by the Crane Pacific Expedition. Field Mus. Nat. Hist. Publ. 335, Zool. Ser. 18(12):383–438.

MUNRO, I. S. R. 1967. The fishes of New Guinea. Department of Agriculture, Stock and Fisheries, Port Moresby, New Guinea, 650 pp.

RYAN, P. A. 1980. A checklist of the brackish and freshwater fish of Fiji. S. Pac. J. Nat. Sci. 1:58–73.

SCHULTZ, L. P. 1943. Fishes of the Phoenix and Samoan islands collected in 1939 during the expedition of the U.S.S. "Bushnell." Bull. U.S. Nat. Mus. 180:1–316 pp.

WHITLEY, G. P. 1927. A checklist of fishes recorded from Fijian waters. Pan-Pac. Res. Inst. J. 2(1):3–8.